**Dividing Exponents**

Just as with multiplying, only exponents with the same base can be divided. For example, we can divide , but we *cannot* divide .

Let’s look at an example: 

We can re-write the numerator and denominator in standard form: 

Three pairs of y’s will cancel: , so we’re left with  or  in the numerator and nothing left in the denominator.

Therefore, =

**The Shortcut**: Look at the original problem and the final answer: =. How can we use the exponents from the original problem to get the exponent in the answer? We can subtract the exponent from the numerator minus the exponent from the denominator. (5 – 3 = 2).

Therefore, **when dividing exponents with the same base, we can SUBTRACT the exponents and keep the same base.**

**Example: **  🡪 It’s ok if you get a negative exponent! We’ll discuss this in more detail later.

**What if we have more than one variable in a problem??**

For example, .

We still use the same principles described above for this problem. Since we can’t divide exponents with different bases, we have to look at only the exponents with the same base. Therefore, we can divide , and  .

 doesn’t divide evenly, so we just reduce the fraction 🡪 





When we combine everything we get . Don’t worry about the negative exponent. We’ll discuss that later.